

Claims

- [c1] 1.A secondary electrical load power management system for an aircraft comprising:
a plurality of secondary electrical loads;
at least one aircraft flight condition sensor; and
a controller coupled to said plurality of secondary electrical loads and to said at least one aircraft flight condition sensor and determining engine secondary power extraction and current operating conditions of said aircraft, determining a engine secondary power extraction limit in response to said current operating conditions, and operating said plurality of secondary electrical loads in response to said engine secondary power extraction limit and said engine secondary power extraction.
- [c2] 2.A system as in claim 1 wherein said plurality of secondary electrical loads comprises at least one direct power secondary load and at least one indirect power secondary load.
- [c3] 3.A system as in claim 2 wherein said at least one direct power secondary load comprises at least one generator or pump.

- [c4] 4.A system as in claim 1 wherein said controller in determining current operating conditions determines engine primary power extraction.
- [c5] 5.A system as in claim 4 wherein said controller in determining said engine primary power extraction determines at least one of engine speed, engine throttle, and high pressure shaft speed.
- [c6] 6.A system as in claim 1 wherein said controller in determining engine secondary power extraction determines power extraction from at least one direct power secondary load selected from at least one of a generator and a pump.
- [c7] 7.A system as in claim 1 wherein said controller operates said plurality of secondary electrical loads in priority when said engine secondary power extraction is less than or equal to approximately said engine secondary power extraction limit.
- [c8] 8.A system as in claim 7 wherein operating said plurality of secondary electrical loads in priority comprises operating a plurality of indirect power secondary loads in response to output limitations of at least one direct power secondary load.

- [c9] 9.A system as in 1 wherein said controller limits operation of said plurality of secondary electrical loads when said engine secondary power extraction is greater than said engine secondary power extraction limit.
- [c10] 10.A system as in claim 9 wherein said controller in limiting operation of said plurality of secondary electrical loads prevents said engine secondary power extraction from exceeding said engine secondary power extraction limit.
- [c11] 11.A method of controlling electrical load power consumption during operation of an aircraft comprising: determining current operating conditions of the aircraft; determining an engine secondary power extraction limit in response to said current operating conditions; determining engine secondary power extraction; and operating a plurality of secondary loads in response to said engine secondary power extraction limit and said engine secondary power extraction.
- [c12] 12.A system as in claim 10 wherein determining current operating conditions comprises determining engine primary power extraction.
- [c13] 13.A system as in claim 11 wherein in determining engine primary power extraction comprises determining

at least one of engine speed, engine throttle, and high pressure shaft speed.

[c14] 14.A system as in claim 10 wherein determining engine secondary power extraction comprises determining power extraction from at least one direct power secondary load selected from at least one of a generator and a pump.

[c15] 15.A system as in claim 10 wherein operating said plurality of secondary loads comprises operating said plurality of secondary loads in priority when said engine secondary power extraction is less than or equal to approximately said engine secondary power extraction limit.

[c16] 16.A system as in claim 15 wherein operating said plurality of secondary loads comprises operating a plurality of indirect power secondary loads in response to output limitations of at least one direct power secondary load.

[c17] 17.A system as in claim 10 wherein operating said plurality of secondary loads comprises limiting operation of said plurality of secondary loads when said engine secondary power extraction is greater than said engine secondary power extraction limit.

- [c18] 18.A system as in claim 17 wherein operation of said plurality of secondary loads is limited so that said engine secondary power extraction does not exceed said engine secondary power extraction limit.
- [c19] 19.A system as in claim 17 wherein operation of said plurality of secondary loads are limited in response to engine output power capability.
- [c20] 20.A method of controlling electrical load power consumption during operation of an aircraft comprising:
determining current operating conditions;
determining an engine secondary power extraction limit in response to said current operating conditions;
determining engine secondary power extraction;
operating a plurality of secondary loads in response to said engine secondary power extraction limit and said engine secondary power extraction;
operating said plurality of secondary loads in priority when said engine secondary power extraction is less than said engine secondary power extraction limit; and
limiting operation of said plurality of secondary loads when said engine secondary power extraction is greater than said engine secondary power extraction limit.